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ABSTRACT

Three groups of secondary school students were identified in the sample of over 7,000 high school students from the 1987/88 California Substance Use Survey based on patterns of involvement with alcohol and other drugs. Of primary interest are high risk users (HRUs) who engage in socially deplored and often dangerous forms of substance use. HRU students made up approximately 14 percent of the students enrolled in the 9th grade and 23 percent in the 11th grade. The other groups included the abstainers and the conventional users. This research examined how HRU students differed from the other two groups on demographics, other measures of substance use, attitudes and experiences relating to substance use, and potential for dropping out of school. Surprisingly, HRUs did not differ appreciably from the other two groups with respect to age, gender, or socioeconomic status. Especially significant from the perspective of schools' programs is the fact that 60 percent of the 11th graders enrolled in continuation high schools were classified as HRU compared to only 20 percent of those enrolled in regular high schools. A High Risk User Scale was developed by identifying questions which discriminated effectively between HRU and the two other groups. Among students still enrolled in school, there was a substantial overlap between high risk drug use and potential for dropping out of school. (ABL)

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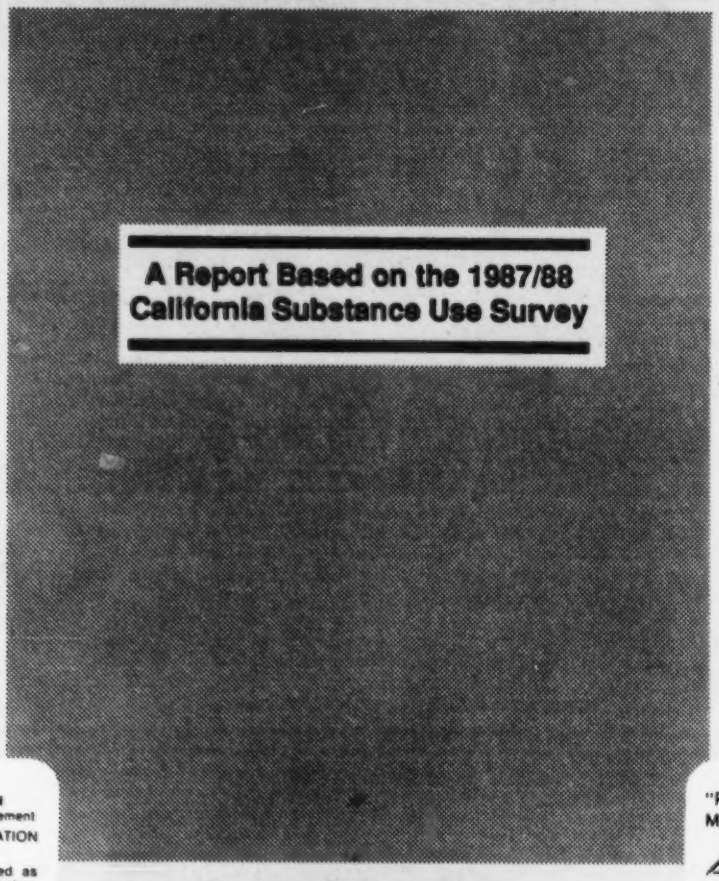
A Report to Attorney General
John K. Van de Kamp

Identifying High Risk Substance Users in Grades 9 and 11



A Report Based on the 1987/88 California Substance Use Survey

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REPORT TO ATTORNEY GENERAL

JOHN K. VAN DE KAMP

IDENTIFYING HIGH RISK SUBSTANCE USERS IN GRADES 9 AND 11

A REPORT BASED ON THE
1987/88 CALIFORNIA SUBSTANCE USE SURVEY

The opinions, findings and conclusions in this
publication are those of the authors and not necessarily
those of the Department of Justice

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December 1989

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REPORT SUMMARY

Three groups of secondary school students were identified in the 9th and 11th grade samples from the 1987/88 California Substance Use Survey based on patterns of involvement with alcohol and other drugs. Of primary interest are high risk users, or HRUs, who engage in socially deplored and often dangerous forms of substance use. These are students who have used cocaine, often in the form of "crack," or who have engaged in polydrug use on a number of occasions, or who have used marijuana at least weekly, or who have tried infrequently used illicit drugs such as LSD, methamphetamine, and PCP. HRU students make up approximately 14% of the students enrolled in the 9th grade and 23% in the 11th grade in the 1987/88 California Substance Use Survey samples.

Of the remaining students in these two grade levels, 28% at grade 9 and 19% at grade 11 abstained from the use of alcohol or other drugs during the six months preceding the 1987/88 California survey. While a very small percentage of abstainers or ABS students had used alcohol or other drugs at some time previous to the six months covered in the survey, most were lifelong abstainers.

The last group of students may be described as conventional users or CON students. These students are labeled "conventional" because their pattern of substance use characterizes the majority of students at their respective grade levels and because there is reason to believe that qualitative, rather than simply quantitative, differences separate them from HRU students. All members of this group had used a psychoactive substance, usually alcohol, at least once in the previous six months. At grade 9 exactly half had been high on alcohol at some point in their lives and one fifth had been high on at least one illicit drug. In grade 11 two thirds had experienced intoxication from alcohol and one fourth from an illicit drug. CON students comprised identical proportions (57%) of the California samples at the 9th and 11th grades.

Any use of alcohol and illicit drugs by adolescents implies risk to the user. Students in the CON group also are taking risks. From the perspectives of prevention and intervention, however, there exist potentially significant distinctions even among students who use alcohol and drugs. For some time researchers and practitioners have warned us that among the latter there is a group of adolescents who are particularly vulnerable. The criteria used in this report to identify HRU students attempt to render operational this notion of high vulnerability.

The overall goal of the research was to assess the extent to which differences in kind, rather than merely in degree, distinguish the three groups of students. In this sense, vulnerability to other kinds of risk, especially dropping out of school, were pertinent.

The specific questions addressed in this research include how HRU students differed from the other two groups on (a) demographics, (b) other measures of substance use, (c) attitudes and experiences relating to substance use, and (d) potential for dropping out of school. In addition, a brief questionnaire to identify HRU students without asking about substance use directly was developed and evaluated. Finally, an attempt was made to estimate the overlap between the students who are HRU and those who are at risk of dropping out of school.

Surprisingly, HRU students did not differ appreciably from the other two groups with respect to age, gender or socio-economic status. However, there were relatively more White and Native American, and fewer Asian, HRU students. There were also relatively more native born, as against foreign born, students in the HRU group. Fewer HRU students lived with both parents and fewer still would choose to live with both parents. The last two findings strongly confirm the hypothesis that HRU students would be more likely to come from dysfunctional families. Especially significant from the perspective of school program is the fact that 60% of the 11th

graders enrolled in continuation high schools were classified as HRU compared to only 20% in regular high schools.

Comparisons between HRU, CON and ABS groups on measures of substance use other than those used to assign students to groups revealed that HRU students were far more likely to have engaged in high risk behaviors associated with substance use. The majority of HRU students (such behavior being

almost confined to this group) had gone to school while high on a drug. HRU students reported with much greater frequency having driven a car, or been a passenger in a car, while drinking than did CON students. Over 90% of HRU students in grade 11 have been high on drugs other than alcohol (as well as on alcohol), while CON students, consistent with the concept of "conventionality," had mainly been high only on alcohol . Finally, HRU students on the average had much earlier experience with intoxication (age 13 or earlier) than CON students did.

Comparisons between groups on attitudes and experiences related to substance use revealed that HRU students were much more likely to live in social environments where peers and adults commonly modeled alcohol and drug use. HRU students were also much more likely to be aware of other students' use of drugs, to know how to get alcohol and other drugs, and to consider both alcohol and illicit drugs relatively easy to obtain in their communities. HRU students seldom reported positive personal outcomes from drug prevention education and were much more inclined to depend on their own experience and that of friends for knowledge about drugs. In contrast, ABS students learned about drugs from parents, school classes and television. ABS students not only reported positive effects from prevention classes, but typically endorsed an intrinsic or internalized reason for avoiding alcohol or other drug use, a response that was very rare among HRU students ABS and CON students believed that students used drugs because of personal problems or peer pressure. HRU students, on the other hand, attributed drug use to hedonistic motives (having a good time and in response to boredom).

HRU students almost invariably scored higher on measures of school dropout potential. They reported lower grades, little or no sense of engagement in the school and a history of behavioral problems in school and community. They were also much more likely to have considered dropping out of school and to have one or more friends who had already dropped out.

A High Risk User Scale was developed by identifying questions which discriminated effectively between HRU and the two other groups, but which did not assess substance use directly. Questions selected fell into two categories. The first incorporated factors conceptually related to substance use such as knowing adults who use drugs, considering one's parents to be relatively less opposed to drug use, feeling that school drug prevention education was not personally effective, etc. The second assessed factors known to predict dropping out of school such as non-conforming, rebellious or delinquent behavior as well as low engagement in school. Most of the questions on the scale are not transparent in that there is usually a logical or experiential relationship between substance use and particular answers. However, the scale does not generate incriminating information as would be the case if alcohol and drug use were assessed directly. Much of the information obtained by the scale is also available from school and other records. Familiarity with the 17 questions on the High Risk User Scale should lead to greater sensitivity to the kind of information that is relevant.

The accuracy of the scale for identifying HRU students was tested on a second subsample independent of the subsample on which the items were selected (cross-validation). Potentially useful cut-off scores were tried out for both grades 9 and 11 and evaluated for number of HRU students identified ("hits") against number of CON or ABS students mistakenly identified ("misses"). Criteria for using various cut-off scores were suggested.

Questions known to predict dropping out of school were used to identify groups of 9th and 11th graders at risk for leaving school early. Membership in these two groups was compared with membership in HRU groups at the same grades. Despite the arbitrary nature of the dropout risk cut-off scores, a very substantial overlap was observed between groups of students in high risk status for both drug use and school dropout, especially at grade 9. Two thirds of 9th grade HRU students were also high dropout risk compared to one third of CON and 15% of ABS students. Among 11th grade students 6 in 10 HRU, 2 in 10 CON and 1 in 10 ABS students were in both dropout and user risk groups. In other words, among students still enrolled in school, there is a substantial overlap between high risk drug use and potential for dropping out of school.

This research supports the proposition that a more inclusive conception of high risk status is needed. Two of the most serious youth problems faced by our society, high risk substance use and dropping out of school, are closely related. Moreover, it appears to be relatively easy to identify students who are in both categories. The need to identify such students as early as possible and to address their needs with comprehensive efforts at intervention is readily apparent.

Rodney Skager

Sandra L. Frith

Los Angeles
November 15, 1988

INTRODUCTION

The research described in this report is based on the theory that adolescents enrolled in secondary schools may be divided into three reasonably distinct populations in relation to alcohol and other drug use. Instead of a continuum extending from no use of any substance to frequent use of two or more substances, this perspective makes qualitative distinctions between abstainers, "conventional" users and high risk users.

Abstainers (ABS) use no psychoactive substances at all, not even alcohol. In so doing they choose to swim well away from the mainstream of a teenage culture in which drinking is widespread and use of other drugs not uncommon. *High risk users* (HRU) are likewise well out of the mainstream, but they swim in the rapids on the other side of the river. They engage in forms of substance use widely held to be dangerous or deviant, even among their teenage peers. Finally there is the mainstream itself. Here are the *conventional* (CON) users who drink or use in an experimental or moderate fashion. A large majority of these students drink at least occasionally, and significant numbers use marijuana occasionally.

The term "conventional" is used partly to emphasize the *statistically* normative nature of the substance use that characterizes this group. As we will see, this category accounts for more than half of the school population by grade 9. Being labeled as "conventional" by no means implies that its members are not also taking risks, since any use of alcohol or illicit drugs by adolescents (or adults) implies a degree of risk, and the more so the younger the drinker or user is. More importantly, however, the labels "high risk" and "conventional" are intended convey the idea that a difference in *kind,* rather than merely in degree, separates members of these two groups.

The assertion that there are at least two qualitatively different groups of users among adolescents imposes a particular way of thinking on a complex reality. But the categories proposed do reflect impressions formed by many observers in contact with adolescents. There is also support from recent research (Newcomb and Bentler, 1988) for the conclusion that heavy drug users constitute a special sub-population which experiences the most severe consequences of substance use.

Overview of the Report

The first part of the report will describe how the 9th and 11th grade students who participated in the 1987/88 California Substance Use Survey were sorted into HRU, CON AND ABS groups. The three groups will then be compared on relevant attitudes, experiences and behaviors. These comparisons will establish the extent to which high risk drug users also engage in other high risk behaviors. Evidence for the latter would support the proposition that high risk substance use is one facet of broader pattern of risk taking behavior in adolescents.

The second part of the report focuses on the development of a questionnaire designed to predict high risk status *without* having to assess the student's alcohol and drug use directly. The measure combines questions known to predict school dropout potential with assessments of attitudes and experiences related to alcohol and drug use. The measure thus combines two major facets of high risk status: dropout potential and problem alcohol and drug use.

The last part of the research assesses the extent to which HRU students are also at risk for dropping out of school. In other words, what is the evidence that high risk substance users and school dropouts overlap substantially, as many observers believe is the case?

The Concept of High Risk Status

As used in this report, "high risk status" refers to individuals who, based on their current behavior, are in danger of experiencing serious negative outcomes later in life. Such outcomes

include inability to form stable or supporting adult relationships, under-employment and unemployment, institutionalization in prisons or mental hospitals, serious health problems, and premature death. In this sense early alcohol and drug use and dropping out of school are really steps along the road to a set of highly undesirable consequences as adults.

When confronting problems in the adolescent population, schools and other social agencies have often behaved as if there were several high risk populations: substance abusers, dropouts or potential dropouts, delinquents, low achievers, potential suicides, and early pregnancy. Prevention and intervention programs typically confront these problems separately, as if different groups of young people belong to each. We suspect that there is substantial overlap among these groups, and the research to be reported supports that assumption.

BACKGROUND

Pertinent details about the 1987/88 second statewide survey of California students enrolled in grades 7, 9, and 11 may be found in Skager, Frith, and Maddahian (1989). The anonymous survey was conducted on over 7,000 students enrolled in a sample of schools representative of California public high schools. The sample was balanced geographically and stratified according to grade 12 enrollment, socio-economic status and percent limited and non-English speaking. Only English-speaking students were assessed. Local school samples of approximately 15% of the grade levels studied were drawn randomly.

Forty-four senior high schools and 42 "feeder" junior high or middle schools participated in the main survey. Among the former, four were continuation high schools, enrolling 11th grade students only. Eight additional continuation high schools were added to the 1987/88 sample, but not included in the analyses on which the survey report was based. These schools were added to the main data set for the current research only.

The questionnaire obtained information on frequency of use of 18 specific substances or classes of substances and polydrug use, as well as age of first use and intoxication. Information on a variety of attitudes and experiences relating to alcohol and other drug use was also elicited, including attitudes of peers, reasons for using or not using, parental attitudes and adult models of substance use, and reactions to prevention education. These measures were described in the earlier report and will be cited where pertinent in this report.

The questionnaire also elicited information on behaviors and attitudes which have been found to predict dropping out of school. These measures were not discussed in the main survey report and are described in the next section.

RATIONALE AND METHOD OF THE RESEARCH

This research defines two types of risk status: (a) high risk substance use and (b) risk of dropping out of school. Its main practical goal is to develop a predictive measure of the former which does not involve asking students what illicit drugs they use and how often they use them. Obviously, the latter type of information can only be obtained under conditions of strict anonymity, as is the case for the California survey, or guaranteed immunity from prosecution, as is given for the survey sponsored by the National Institute on Drug Abuse (Johnston, O'Malley and Bachman, 1986).

Prevention and intervention programs assume that target populations can be identified. In the case of alcohol and drug use, both illicit activities for teenagers, a mode of identification is needed which does not require students to admit to illegal acts (unless the latter are no secret) or other types of personally sensitive information. Hence the goal is to create a measure which predicts high risk status with respect to substance use without asking about substance use itself.

In addition, there is a broader conceptual goal which relates to the way in which school and community intervention programs are designed and administered. This is to assess how closely dropout risk and high risk substance use are related, or, more specifically, to determine the extent to which the two high risk populations are made up of the same students. Recent research has shown that measures of school dropout and substance use are related in a predictive sense (Mensch and Kandel, 1988). We wish to ascertain for our large sample what the chances are that a young person in one group will also belong to another.

1. Measuring Dropout Risk

Research on school dropouts have identified a number of predisposing or predictive factors (Bachman, Green and Wirtanen, 1971; Ekstrom, Goertz, Pollack and Rock, 1986). These factors fall into four categories: (1) *acting-out*, or a history of getting into trouble in school or community; (2) *poor academic performance*; (3) *low engagement in school* (academic performance as well as involvement), (4) *early assumption of adult roles*, or wanting to leave school in order to work. In addition to questions in these areas, we have added questions on (5) *related peer behavior* on the assumption that respondents behave much like their close friends in this as in other areas of performance. We have also added questions on (6) *family living situation* in the expectation that high risk students would be more likely to come from broken or dysfunctional families. These categories are listed below along with specific measures used for each.

Acting-Out Behavior

Six questions assessed a history of acting-out behavior in school and community. A four point scale was used for these items (Never, Once/Twice, 3-6 Times, and More than 6 Times).

"Cut (not attended) a school class"
"Been suspended or expelled from school"
"Been arrested by police"
"Been placed on probation by a judge"
"Been in trouble at school (sent out of class to principal, assistant principal, counselor)"
"Been absent from school all day without an excuse such as being sick or having a doctor's appointment"

The above questions were written to represent specific findings in the research literature on dropping out of school. Two additional questions were written to measure acting-out behavior involving drug or alcohol use.

"Been high at school on a drug like marijuana, pills, speed, etc."
"Driven a car or taken a ride with friends who were drinking"

Poor Academic Performance

Academic performance was assessed by self-reported grade point average. Students were asked to complete the sentence, "My average grade in the last year is about....." by checking the following scale: A (4.0), B (3.0), C (2.0), D (1.0) or F.

Engagement in School

Five questions assessed students' level of engagement in school work and activities.

"In the last year have you been active in organized school activities such as athletic teams, clubs, student government, or other organizations?" (Five point response scale from "never participated in school activities" to "one of the most active in my grade")
"Generally, how interested are you in subjects you have been studying in school this year?" (Five point scale from "bored, not interested at all" to "almost everything is interesting")
"How hard are you working on school subjects?" (Five point scale from "do hardly any school work" to " one of the hardest-working students in my grade")
"Is there any *adult* (teacher or other adult) at school whom you feel close to, can talk to?" ("yes" or "no")
"Generally, how do you like school?" (Five point scale from "I hate it" to "I really like it")

Early Assumption of Adult Role

There were three questions related to work and the adult role.

"How important is it for you to finish high school in order to get the kind of job you want?" (Four point scale from "not important at all . . ." to "very important, essential")
"Do you ever think about quitting school so that you can get a full time job?" (Five point scale from "no, never . . ." to "definitely intend to quit school and get a job")
"Do you ever think about quitting school so that you can take better care of your family responsibilities?" (Five point scale from "no, never . . ." to "definitely intend to quit school and help out family.")

Friends' Behavior

Since the adolescent (or adult) ordinarily chooses friends who have similar interests and proclivities, two new items were written to assess the behavior of friends with respect to (a) acting-out and (b) dropping out of school.

"Have any of your best friends or other students you talk to the most in school ever gotten into trouble at school . . . or with the police?" (Five point scale from "no, never" to "always seems to be in trouble")
"Have any of your best friends or students you talk to the most dropped out of school?" (Four point scale from "no, none dropped out" to "three or more have dropped out")

Family Situation and Preference

Adolescents in any high risk category frequently come from broken or dysfunctional families. While it was not possible in the survey to fully assess this topic, two general items were written to get at current and preferred family situation.

"With whom do you live?" (Five point scale for single parent, both parents, relative, foster home, other)
"With whom would you like to live?" (Same scale)

2. Use of the Dropout Items in the Research

The above items were used in two ways. First, responses to each were compared for ability to discriminate between HRU, CON and ABS groups. Discriminating items were then examined to determine which ones (a) discriminated specifically between the HRU and the two other groups, and (b) would in other respects be suitable to include in a scale to identify HRU students. Second, dropout risk items were themselves combined into a scale used in the final phase of the research to identify a *dropout risk* group. This group was compared to the HRU group to assess the degree of overlap in membership.

3. Identifying High Risk User, Conventional User and Abstainer Groups

This section describes criteria used to identify the three groups on which this research is based.

High Risk Users

As already suggested, HRU students engage in forms of substance use widely held to be dangerous or inappropriate. This definition suggests a set of inclusion criteria which allow any one of several behaviors to be decisive, as compared to a total score which sums up a variety of behaviors. For example, the use of cocaine in the "crack" form has been portrayed in the media as leading to rapid addiction and associated criminal behavior. Fear of this substance may be the reason that relatively few respondents to the 1987/88 survey reported using crack (5% of 9th and 9% of 11th graders). Likewise, regular use of marijuana (or other drugs) was judged harmful by a significant majority of students at all three grade levels. These two findings suggest that any use of crack *or* frequent use of marijuana (the only drug used frequently by appreciable numbers of students) would be suitable criteria for assigning respondents to the HRU group.

Cocaine in any other form has a reputation similar to that ascribed to its "crack" manifestation. The survey revealed that only 5% of 9th and 11% of 11th grade students used cocaine in any form. Any use of cocaine thus becomes a third selection criterion.

Polydrug use, or use of two or more psychoactive substances at the same time, is a dangerous practice. Modern prevention programs in the schools typically target this practice along with other risky patterns of use. Despite this reputation, in the most recent survey 21% of 9th and 30% of 11th grade students reported using more than one substance. However, very few students did so an a regular basis (9% of 9th and 12% of 11th graders). These students should be in the HRU group.

Use of illicit drugs other than marijuana, amphetamines, and cocaine is relatively rare in the school-attending population. Therefore, virtually any use of such substances is a logical criterion for inclusion in the HRU group.

In summary, meeting any one of the following criteria (for the previous six months) resulted in assignment to the HRU group:

(1) use of cocaine in any form[1]
(2) use of crack
(3) weekly or more frequent use of marijuana
(4) polydrug use 3-6 times or more frequently

---

[1] *While crack is a form of cocaine, these substances were assessed by separate items on the survey questionnaire in order to obtain specific information on the former.*

(5) total score of 14 on illicit drugs other than cocaine and marijuana (used drug such as PCP at least once a month or two such drugs "a few times", etc.)

One other criterion was added. Among students who use illicit drugs, at least some use of alcohol is virtually universal. This observation suggested that possible careless responses which resulted in meeting one of the high risk criteria might in part be compensated for by requiring that all cases selected by the first five criteria also have reported at least some alcohol use in the previous six months. This resulted in a sixth criterion which applied only to respondents meeting one or more of the first five criterion. In this case a cut point was established at a score of at least 5 on total alcohol use, (where a score of 3 indicates no use).

Abstainers

On the most recent survey about 70% of 11th and 60% of 9th graders reported at least some use of alcohol in the previous six months. Abstainers from alcohol and other drugs are a small minority at both grade levels. Moreover, abstaining from a substance which is heavily advertised, promoted *and* modeled by peers and adults in our society (47% of 9th and 55% of 11 grade students report that "many or all" of the adults they know use alcohol) implies lack of access or strong resistance. Since the survey data suggest that the former is unlikely (57% of 9th and 72% of 11th grade students report that alcohol is easy or fairly easy to obtain), personal or collective resistance is the most likely explanation.

Abstainers from alcohol and other drugs are obviously a distinct group, especially among students 14 years and older. This selection criteria is a simple one. There should be no reported use of alcohol or other substances in the previous six months. However, there may have been, and in a few cases there was, use of alcohol or other drugs before the period assessed in the survey.

Conventional Users

Conventional users are obviously those who are left over after identifying HRU and ABS students. This group may be subject to further differentiation, but for the present its combined characteristics will be explored in comparison with the other two groups. In general, CON students have used alcohol or marijuana (occasionally) or substances other than cocaine no more than once in the previous six months. Further description of this group can wait until relevant data are provided in the next section.

4. Cross Validation Sample

The total sample at the two grade levels was divided randomly in half. Students in each half sample were then classified as HRU, CON or ABS. Next, the first half sample was used to identify items discriminating between the HRU group and the other two groups. A scale based on these items was then used to predict which students in the second (validation) sample "should" belong to the HRU group. The validity of the scale is a function of the degree to which the HRU students in the second group were accurately identified by this procedure.

Validation of the scale using an independent sample is appropriate due to the possibility that random statistical error might account for differences between groups in the first sample. By applying the resulting scale to a new sample this alternative explanation of the results can be rendered unlikely, assuming, of course, satisfactory overlap between predicted and actual members of the HRU groups.

FINDINGS OF THE RESEARCH

The findings of this research will be reported in four sections. In the first, the three groups identified in the first half sample will be contrasted on (a) demographic variables (gender, etc.) and (b) substance use measures *not* used in constituting the groups (driving under the influence, etc.). In the second, the groups will be compared on other measures in the survey, including (a) attitudes and experiences related to substance use and (b) biographical and other information predicting dropping out of school. The criteria used to select items for the *High Risk User Scale* will also be described. In the third section, the resulting scale will be used to predict which students in the second sample would be expected to be HRU. Correspondence between predicted and actual high risk groups will be examined. Finally, in the last section measures of dropout risk developed in an earlier study will be used to generate predicted dropout groups at each grade level. Overlap between this and the HRU group will be examined to establish the extent to which definitions of *high risk user* vs. *dropout risk* adopted in this research actually lead to the identification of substantially the same group of students.

1. Demographic Comparisons Between High Risk User, Conventional and Abstainer Groups for Sample One

The HRU, CON and ABS groups for the first half sample were compared by grade level on age, gender, ethnicity, socio-economic status, U.S. vs. foreign birth, enrollment in continuation vs. regular school and current family living situation vs. preferred situation. These comparisons reveal whether or not HRU students differ markedly from the other two groups on standard descriptive measures. In other words, does this group represent a cross-section of California secondary school students, or is it composed primarily of some specific subgroup of students, for example, male students of low socio-economic status?

Age

Table 1 provides mean ages of the three groups at each grade level. For students in grade 9 average age is almost identical for the three groups (about 14.4 years). However, F is significant at grade 11 with the HRU group averaging slightly older than the other two groups (Newman-Keuls test, $p < .05$). While statistically significant, this difference amounts to only about two months, (16.5 years for the HRU students compared to approximately 16.4 years for CON and ABS students).

Table 1

Mean Ages of HRU, CON and ABS Groups
for Grades 9 and 11

Grade	Groups/Means			df	F	p
	HRU	CON	ABS			
9	14.44	14.41	14.41	2,1196	0.17	-
11	16.53	16.37	16.42	2,1352	8.72	c*

GENDER

Comparisons between groups in Table 2 on percentage of males vs. females fails to reveal any systematic pattern. (Chi-square tests for each grade level did not approach statistical significance.) In other words, HRU students do not differ from the other two groups with respect to gender distribution.

Table 2

Percentages of Males and Females in HRU, CON and ABS Groups for Grades 9 and 11

	Grade 9			Grade 11		
	HRU	CON	ABS	HRU	CON	ABS
Male	49.0	46.9	45.3	51.2	49.3	47.7
Female	51.0	53.1	54.7	48.8	50.7	52.3
N	149	688	340	328	752	264

Ethnicity

Ethnic comparisons are displayed in Table 3. The groups do show differences related to ethnic composition (for grade 9 chi square = 51.53, $p < .0001$; for grade 11 chi square = 78.42, $p < .0001$). Focussing on the HRU , White students in grade 9 lead with 16% thus classified, while Asians are least represented proportionally with only 5.3% classified HRU. In grade 11 Native Americans are quite disproportionately represented at 48.5% HRU. Whites are second at 30% HRU. Asians again trail with only 11% in the HRU group.

Table 3

Percentage Breakdown of Ethnic Membership for HRU, CON and ABS Groups for Grades 9 and 11

	Grade 9			Grade 11		
	HRU	CON	ABS	HRU	CON	ABS
Asian	5.3	48.0	45.9	10.9	55.8	33.3
Black	6.5	56.9	36.6	15.8	54.5	29.7
Hispanic	15.1	63.6	21.3	22.7	55.2	22.1
Nat. Amer.	11.6	74.4	14.0	48.5	36.4	15.2
White	15.5	57.6	26.9	29.6	58.6	11.8
Other	11.1	60.5	28.4	32.0	48.0	20.0

Socio-Economic Status

For both grade levels F-tests failed to approach statistical significance for mean socio-economic status as assessed by parents' education. This is a startling finding, since negative social indicators typically *decrease* with higher affluence and education. Problem substance use, at least in the secondary school population, appears to be evenly balanced with respect to social class.

U.S. vs. Foreign Born

Table 4 compares by grade level the percentages of each group who were born in the U.S. vs. a foreign country. The pattern is marked. For both grade levels (chi square for grade 9 = 21.0, $p < .0001$; chi square for grade 11 = 26.96, $p < .0001$) there are relatively more students in the HRU group among U.S. than among foreign born. On the other side of the ledger, there are relatively more foreign born students in the ABS group.

Table 4

Percentage Breakdown of U.S. vs. Foreign Born Students by HRU, CON and ABS Groups for Grades 9 and 11

	Grade 9			Grade 11		
	HRU	CON	ABS	HRU	CON	ABS
U.S. Born	13.6	60.7	25.7	26.9	56.21	6.9
Foreign Born	9.2	50.8	40.0	16.4	54.7	28.9
N	152	704	346	336	761	265

Foreign born students in California are less likely to be high risk or even conventional substance users than are students born in this country. In contrast, their rate of abstention considerably exceeds that for U.S. born students. Non-native students appear to be less acculturated to a society in which alcohol and drug use are tolerated by a significant proportion of native born secondary school students.

Enrollment in Continuation vs. Regular School

As noted earlier, eight continuation high schools were added to the regular state sample (which itself included four such schools) for this research. Continuation high schools enroll students in higher grade levels who have had problems in regular schools, but who do not fit into any learning disability or other special classifications. Many students in continuation high schools have a history of attendance and disciplinary problems as well as academic performance well below their level of ability. It was expected that a relatively large proportion of the students enrolled in these schools would fall into the HRU classification.

Table 5

Percentage of HRU, CON and ABS Students in Grade 11 by Continuation vs. Regular High School

	HRU	CON	ABS
Continuation	60.0	30.4	9.6
Regular	21.2	58.2	20.6

Table 5 compares the continuation vs. regular high school 11th grade students on percentage classified in the HRU, CON or ABS groups. In continuation schools, 60% of students were HRU, 30% CON and 10% ABS. In stark contrast, 58% of regular high school students

were in the CON group, while the HRU and ABS groups each accounted for 21% of the remainder. The majority of continuation school students in California thus fall into the *high risk user* group. An almost identical majority of students in regular high schools are *conventional users*.

High risk substance users comprise the larger part of the population served by continuation high schools in California. While this finding provides validation for the formula by which HRU students were identified in this research, it also raises the larger issue of the degree to which curricula and other aspects of continuation high school programs reflect what seem to be the most salient characteristic of their student bodies. That is, are continuation high schools usually geared to serve effectively a population of high risk substance users?

Family Situation and Preference

Research confirms that adolescents from broken and otherwise dysfunctional families are more likely to be problem drinkers and users than students from intact, functional families (Hawkins, Lishner, Catalano and Howard, 1986). Our hypotheses are that HRU students will (a) more frequently report living with a single parent or in some other atypical family situation and (b) show dissatisfaction with the normal family situation, more often expressing preferences for living with one parent or another relative instead of with both of their natural parents.

Table 6

Percentage of Students Living with Both Parents vs. "Other" for HRU, CON and ABS Groups at Grades 9 and 11

	Grade 9			Grade 11		
	HRU	CON	ABS	HRU	CON	ABS
Both	48.6	65.9	69.7	56.3	64.3	66.0
Other	51.4	34.1	30.3	43.7	35.7	34.0

The three groups are compared in Table 6 for living with both parents vs. other arrangements combined (single parent, relative, foster home, other). Although the pattern is somewhat more pronounced among 9th grade students, at both grade levels HRU students are more likely to live in arrangements other than the two parent, family situation (chi square for grade 9 = 20.48, $p < .0001$; chi square for grade 11 = 7.8, $p < .05$).

Irrespective of grade level, about 2 out of 3 CON and ABS students live with both parents. Slightly less than half (49%) of 9th and somewhat more than half (56%) of 11th grade HRU students live with both parents. The stronger effect observed for 9th graders may reflect a higher rate of dropout between grades 9 and 11 by students in dysfunctional family situations.

Table 7

Percentage of Students Who Would Prefer to Live with Both Parents vs. "Other"

	Grade 9			Grade 11		
	HRU	CON	ABS	HRU	CON	ABS
Both	39.4	65.9	76.7	42.2	61.2	69.3
Other	60.6	34.1	23.3	57.8	38.8	30.7

Table 7 provides results for student reports of preferred living arrangements. Here the differences among groups appear to be greater than those in Table 6 (for grade 9 chi square = 61.4, $p < .0001$; for grade 11 chi square = 49.86, $p < .0001$). At both grade levels, the majority of HRU students preferred a living arrangement other than with both parents (61% of 9th and 58% of 11th graders). The order of preference was reversed for the CON and ABS students, with the latter preferring the traditional, two parent family situation most strongly of all groups (77% of 9th and 69% of 11th grade students).

Compared to the other two groups, HRU students are much more likely at both grade levels to prefer arrangements other than living with both of their parents. This finding strongly supports our prediction that HRU students would be more likely to have an unhappy family history.

Summary

Surprisingly, HRU students did not differ appreciably from the other two groups with respect to age, gender or socio-economic status. There were differences in the way in which ethnic groups were distributed, however. In particular, White and Native American students were "over" represented in the HRU group, while Asian students were "under" represented. There were also relatively more U.S. than foreign born students in the HRU group.

Perhaps the most striking single finding was the high proportion of high risk users among students in California continuation schools, amounting to 60% of the 11th grade population. This finding validates the way in which students were assigned to the HRU group. It also raises the issue of the degree to which such schools are geared to meet the needs of young, high risk drug users.

Fewer HRU students live with both parents than do students in conventional and abstainer groups. Moreover, when asked with whom they would like to live, even more HRU students chose living with one parent, relatives or foster homes. These findings confirm earlier research showing that broken or dysfunctional family life is common among substance abusing young people.

2. Percentages of HRU, CON and ABS Students in Regular California Sample

The regular California sample is a stratified, random sample representative of secondary schools for the entire state. The eight extra continuation schools included in this study obviously increased the proportion of HRU students over what it would be in the regular sample. In order to determine the exact percentages of HRU, CON and ABS groups in the regular sample, these eight continuation schools had to be deleted. These results are reported in Table 8.

Table 8

Percentages of HRU, CON and ABS Students in Regular California Sample, Grades 9 and 11

	HRU	CON	ABS	N
Grade 9	14.2	57.4	28.3	1,917
Grade 11	23.3	57.4	19.3	2,653

Interestingly enough, the percentage of CON students in the regular sample is exactly the same for both 9th and 11th grades (57%) or about 6 in 10 students at each grade level. The percentage of abstaining students declines by about 10% between the 9th and 11th grades, and the percentage of high risk students increases accordingly. By grade 11, slightly under 1 in 4 students was classified as HRU.

3. Comparisons Between Groups on Other Measures of Substance Use

Questions about aspects of substance use other than those by which students were assigned to HRU, CON and ABS groups contribute additional pertinent information. The obvious hypotheses is that the three groups should differ on other aspects of substance use in ways consistent with "high risk," "conventional" and "abstainer" status. If the data suggest otherwise, the concepts themselves and/or the operations by which corresponding groups were identified would be called into question.

The following comparisons between the three groups are made by grade level: (a) lifetime percentage who have been "high" or intoxicated on alcohol vs. drugs; (b) percentage using alcohol vs. marijuana or other illicit drugs for their first "high" (c) percentage who have driven a car while drinking or ridden in a car with friends who were drinking; (d) percentage who have been "high" on a drug (marijuana, pills, speed, etc.) at least once while at school; and (e) percentage smoking cigarettes in the previous month.

Lifetime Percentages "High" on Alcohol vs. Other Drugs

The percentages of students who reported having been "high" at least once on alcohol vs. other drugs are displayed in Table 9. These results provide striking evidence of qualitative differences among the three groups.

Table 9

Percentages (Lifetime) Who Have Been "High" on Alcohol vs. Other Drugs

	Grade 9			Grade 11		
	HRU	CON	ABS	HRU	CON	ABS
Alcohol	86.4	50.0	3.5	98.2	66.5	10.4
Other Drugs	70.1	19.6	1.4	91.4	26.7	4.9

First, at both grade levels there is a sharp decrease in the percentage who have been "high" on either substance going from HRU to CON to ABS respondents. (The small percentages of

ABS or "abstainer" students who reported having been "high" reflects the fact that the substance use items from which the groups were derived refer to use in the previous six months, while the items assessing age of first use and intoxication, on which Table 9 is based, reflect lifetime use.)

Most important is the fact that the great majority of HRU students have been "high" on both alcohol and other drugs (86% and 70%, respectively, at grade 9 and 98% and 91% at grade 11), while the majority of CON students have been "high" on alcohol alone (50% to 20% at grade 9 and 66% to 27% at grade 11). This clear preference on the part of CON students for alcohol over other drugs is thoroughly consistent with their characterization as "conventional."

Age of First Alcohol vs. Drug Intoxication

In view of their more serious drug involvement, HRU students should report earlier experiences with alcohol and drug intoxication than students in the other groups. This turned out to be true. F tests for mean age of first intoxication were significant at less than $p < .0001$ for both grade levels and for both alcohol and other drugs. Newman-Keuls tests for differences between groups in all four cases were also significant ($p < .05$), with HRU students reporting earlier average age of first intoxication than CON students who, in turn, reported earlier average age than ABS students.

Table 10 gives the percentages of each group who reported having been "high" on each class of substances by age 13 or earlier. (Statewide and local surveys have consistently shown the greatest increments in substance use at age 13, the modal age for the eighth grade.)

Table 10

Percentages of HRU, CON and ABS Groups
"High" on Alcohol vs. Other Drugs by Age 13

	Grade 9		Grade 11	
	Alcohol	Other	Alcohol	Other
HRU	74.0	66.9	61.8	50.6
CON	37.4	18.6	20.9	11.6
ABS	2.1	1.8	4.5	3.0

Since very few ABS students reported having been intoxicated from either alcohol or other drugs by age 13, the comparisons of greatest interest are between HRU vs. CON students. In grade 9 twice as many HRU as CON students had been "high" on alcohol (74% to 37%). In grade 11 the difference was greater at 3 to 1 for alcohol (62% to 21%) and 4+ to 1 for other drugs (51% to 12%).[2]

These results further reinforce the high risk vs. conventional distinction. A majority or near majority of HRU students report having been intoxicated on alcohol as well as other drugs by age 13 compared to a minority of CON students and virtually no currently abstaining students in the ABS group. Moreover, most intoxication experience on the part of CON students was with alcohol, with only small minorities having been "high" on drugs other than alcohol by age 13. In

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[2] *Total percentages of either type of intoxication by age 13 dropped somewhat for grade 11 students, presumably because of forgetting over the longer time period or revision, based on later experience, of their assessments of first intoxication.*

contrast, many more HRU students had been intoxicated by age 13, and their experience included both alcohol and other drugs.

Substance Used for First "High"

Table 11 gives the percentage of students who reported that their first "high" was using alcohol vs. marijuana vs. other drugs. This information is listed for the HRU and CON groups only, since the number of ABS students who had ever been "high" was extremely low. The expectation, of course, is that HRU students should report relatively more first intoxication on marijuana or other drugs than would students in the other two groups. Note that the columns in this table sum to 100% by virtue of referring only to those students who had been "high". The total percentage of each group who had been "high" (all substances combined) is reported in the last row of the table.

The hypothesis that HRU students would report relatively more first intoxication experiences on drugs other than alcohol is confirmed in Table 11, though not dramatically (chi square = 6.41, $p < .05$ for grade 9; chi square = 69.21, $p < .0001$ for grade 11). Among 9th graders in the HRU group who reported having been "high", 70% had their first such experience with alcohol compared to 82% for CON students. At grade 11 the disparity was stronger with 64% of HRU students vs. 88% of CON students reporting their first intoxication with alcohol vs. other drugs. In grade 11, HRU students were three times as likely to have experienced their first "high" with marijuana than were CON students (33% to 11%).

Table 11

Percentages of Students Reporting First "High"
on Alcohol, Marijuana or Other Drugs
for HRU vs. CON Groups Only

	Grade 9		Grade 11	
	HRU	CON	HRU	CON
Alcohol	70.1	82.3	63.6	87.5
Marijuana	24.8	15.9	33.4	11.0
Other Drugs	5.1	1.8	3.0	1.5
Total % "high"	91.9	56.4	98.5	69.3

Engaging in Risk-Taking Behavior Associated with Alcohol or Drugs

One would expect members of the HRU group to have engaged in more risk-taking behavior associated with the use of alcohol or drugs. Two measures on the survey assessed such behavior: (a) driving a car while drinking or riding in a car with friends while drinking and (b) having been "high" at school on an illicit drug like marijuana or amphetamines.

Driving/Riding in a Car While Drinking

Table 12 reports the percentages of students in each of the three groups who had either driven a car while drinking or ridden in a car with friends while drinking.

Table 12

Percentage Driving/Riding in a Car While Drinking

Group	Grade 9	Grade 11
HRU	53.4	60.0
CON	24.1	37.0
ABS	5.0	6.0

The hypothesis of greater risk-taking behavior by HRU students is strongly confirmed (chi square statistics for the full contingency tables for both grades were significant at $p < .0001$). A majority of HRU students at both grade levels reported having driven a car while drinking. For CON students only 1 in 3 had done so even at grade 11. Only a tiny minority of ABS students had engaged in this behavior.

Going to School While "High" on Drugs

Going to school while "high" on a drug risks identification and consequent suspension, expulsion, or other disciplinary action. The HRU group would be expected to report this behavior with much greater frequency. These results are provided in Table 13.

Table 13

Percentage "High" on Drugs at School

Group	Grade 9	Grade 11
HRU	38.8	57.4
CON	3.9	6.3
ABS	0.9	1.5

The table shows that going to school "high" is a risk-taking behavior engaged in by almost 4 in 10 HRU students in grade 9 and 6 in 10 in grade 11 (chi squares for the full contingency tables are significant beyond the .0001 level for both grades). By comparison, *virtually no students in either the conventional or abstainer groups report going to school "high"*. Possibly more than any other findings, those in Table 13 argue for a qualitative difference between students in the HRU vs. other groups.

Smoking Cigarettes

Since many epidemiological research studies have associated cigarette smoking with the use of psychoactive substances (though not necessarily with at-risk use) it is of interest to compare the groups on this behavior. This information is provided in Table 14 for smoking during the preceding month.

Table 14

Percentages Smoking Cigarettes

Group	Grade 9	Grade 11
HRU	57.0	64.4
CON	26.5	20.5
ABS	2.6	4.5

Students in the HRU group are much more likely to have smoked cigarettes in the previous month. For example, at grade 11 over three times as many HRU students smoked cigarettes than CON students. Less than 5% of abstainers regardless of grade level had smoked. (F tests based on mean frequency of smoking by group were significant at $p < .0001$ at both grade levels. Newman-Keuls tests between groups were also significant for all comparisons.)

Summary

Comparisons between HRU, CON and ABS groups on measures of substance use which were not used in the assignment of students to groups mainly reveal large differences in the direction predicted. HRU students are far more likely to have engaged in high risk behaviors associated with substance use. In particular, having gone to school "high" on drugs occurs almost entirely within this group, and is reported by a majority of HRU students in grade 11. Having driven or been with friends in a car while drinking (lifetime) is also much more common among HRU students, and almost never reported by abstainers. Also significant is the fact that the great majority of HRU students at both grade levels (and over 90% at grade 11) have been "high" on drugs other than alcohol (as well as on alcohol). Students in the CON group, in contrast, are much more likely to have been "high" on alcohol only, consistent with the hypothesis that their substance use is of a conventional nature. Likewise, HRU students more commonly had early (age 13 or before) intoxication experiences with alcohol as well as with other drugs.

These observations suggest that the thinking on which the groups were derived was valid. However, finer tuning would certainly be possible. For example, the ABS group contains a few students who have used alcohol and other drugs, even to the point of having been "high", though not in the previous six months. Such students appear to have *given up* substance use rather than shown lifetime resistance. As such they are a special (though very tiny) group.

4. Comparisons Between Groups on Attitudes and Experiences

In addition to the questions on substance use, the survey elicited information on 76 potentially related attitudes, experiences or activities. The HRU, CON and ABS groups were compared on each of these items of information. (Chi square tests were calculated for dichotomous or "yes/no" responses and F tests for continuous scales. (Newman-Keuls comparisons between groups were also calculated for the latter). The primary objective of this aspect of the research was to identify items of information with potential for identifying HRU students without having to ask about substance use directly.

Virtually all of the items discriminated significantly between HRU, CON and ABS students. To report all of these results in detail would produce information overload irrelevant to the specific objectives of this report. Instead, interesting trends in the data will be noted before moving on to the selection of items for the proposed HRU identification scale. The trends will be divided into two sections, the first dealing with the large set of attitudes and experiences relating to substance use and the second with attitudes and behaviors associated with school dropout risk.

Attitudes and Experiences Relating to Substance Use

High risk users fall at one extreme on attitudes and experiences related to the use of alcohol and other drugs, while abstainers fall at the opposite extreme. The HRU students, for example, knew more adults who used alcohol, marijuana, cocaine or pills and ABS students the fewest. HRU students characterized their closest friends as more like students who get "high" at parties and use alcohol or other drugs regularly than did CON students who likewise rated their own peers higher than did ABS students. More HRU students believed it was "very easy" to get alcohol and marijuana than did CON students who again exceeded ABS students. This pattern repeated itself on virtually all of the items on which theory or common sense would predict either the order HRU > CON > ABS, or visa versa.

Abstaining students were more likely to report learning about alcohol and drugs from parents, school classes, and television than were CON or HRU students. The latter, not surprisingly, more often cited their own and friends' and siblings' experiences. ABS students were less likely to cite specific sources where students obtained drugs. They were simply less knowledgeable about the topic. They were also more likely to believe that students use drugs "to get away from problems" or because "their friends do" than the other two groups. In contrast, HRU students more often endorsed reasons such as "to feel good" or "because they are bored." In other words, abstaining students and, to a lesser degree, conventional users, attributed student drug use to problems in the user or to peer pressure, while high risk users stressed hedonistic motives.

ABS students also endorsed with greater frequency virtually any reason for not using drugs. Surprisingly, abstainers had the lowest percentage of students who had taken drug education in school during the year preceding the survey. However, ABS students were much more likely to endorse positive outcomes of prevention classes or programs. On these responses ABS and CON students were more like one another than they were like HRU students. This generalization does not hold for the last item in the series: "had already decided on my own not to use drugs or drink alcohol." This particular question separated the three groups as widely as any ($X^2 = 134.8$, $p < .0001$ for grade 9 and $X^2 = 181.8$, $p < .0001$ for grade 11). This item is also of special interest for theoretical reasons. Endorsement implies an intrinsic reason for not using or drinking as opposed to extrinsic reasons such as disappointing parents or losing friends or becoming an addict. This particular breakdown is provided in Table 15.

Table 15

Percentages of 9th and 11th Grade Students Endorsing an Intrinsic Reason for Not Using or Drinking for HRU, CON and ABS Groups

	HRU	CON	ABS
Grade 9	13.2	38.5	65.9
Grade 11	13.9	42.1	67.5

This question showed much larger discrepancies between the three groups than did any of the other possible outcomes of prevention education. In other words, no specific effect of prevention education distinguished between the groups as dramatically as did a pre-existing, self-imposed decision for abstinence.

Measures of School Dropout Potential

Virtually without exception, HRU students scored higher on measures of school dropout potential. This assertion holds for each of the facets of dropout potential cited at the beginning of the report. HRU students were more likely to report instances of "acting-out" behavior such as being suspended or expelled from school and being arrested. Their academic performance was also lower as shown in Table 16 which gives the percent of students in each group who reported average grades of "C or less." (F tests for average GPA were significant for both grade levels: F for grade 9 = 22.6, df = 2, 1134; for grade 11 = 55.67, df = 2,1314, and $p < .0001$ in both cases. Newman-Keuls tests were significant in both cases for all comparisons, with the order of mean GPA being HRU < CON < ABS).

Table 16

Percentages of 9th and 11th Grade Students
Reporting Average Grades of "C or Less"
for HRU, CON and ABS Groups

	HRU	CON	ABS
Grade 9	49.6	37.2	25.0
Grade 11	62.5	38.4	29.0

As is apparent in Table 16, among 9th graders half of the HRU, one third of CON and only one fourth of ABS students reported average grades of less than "C." Among students in grade 11 the percentage of CON and ABS students rose only slightly, while the HRU percentage increased to almost two thirds.

HRU students scored lower on *engagement in school*. They reported less interest in school and were more likely to indicate that they did not work very hard on schoolwork. About one third of HRU students at both grade levels reported that they did not like school compared to only half as many CON and 10% or less of ABS students. Contrary to expectation (and the only instance where this was the case), HRU students were just as likely to report that they felt "close to an adult at school." This is one of the few comparisons that did not attain statistical significance, even though somewhat higher percentages of HRU students endorsed this alternative at both grade levels.

Finishing school was less important for a larger proportion of HRU students. The latter were also less active in school. Yet, there was no difference between CON and ABS students on participation in school activities, which is consistent with the description of the former as "conventional" students.

HRU students were also more likely to lean toward an *early assumption of adult role*, although not in large numbers. For example, 23% of 9th and 35% of 11th grade students in the HRU group answered from "thought about it once or twice" to "definitely intend to quit" school to help support their families. While these rates were higher than for the other two groups, they still accounted for only one in five of the HRU students at grade 9 and one in three at grade 11.

Differences between the groups on *family situation and preference* were described earlier. HRU students were considerably more likely to prefer living arrangements other than with their two natural parents, leading to the conclusion that alienation from their families, or at least their intact families, was much more common in this group.

Finally, responses to items assessing *friends' acting-out behavior* were consistent with our expectations. Friends of HRU students were much more likely to have been in trouble in school or to have dropped out of school. The percentages answering from once or twice or more often for the three groups are shown in Table 17. (F for grade 9 = 49.65 and F for grade 11 = 86.32, $p < .0001$ in both cases).

Table 17

Percentages of Friends in Trouble in School "Once or Twice" or More Often for HRU, CON and ABS Groups

	HRU	CON	ABS
Grade 9	66.2	46.6	26.8
Grade 11	67.7	40	22.7

Among 9th graders, two thirds of HRU, half of CON and one fourth of ABS students reported that friends had been in trouble in school two or more times. These differences between HRU and other students increased for 11th graders.

Summary

Distinctive differences emerge when the three groups are compared on attitudes and experiences related to the use of alcohol and other drugs. HRU students commonly reported a social environment of peers and adults in which models of heavy use of alcohol and illicit drugs are quite common. HRU students were also much more likely to be aware of other students using drugs, to know how to get alcohol and drugs, and to rate alcohol and drugs as easy to obtain in their communities. HRU students rarely reported positive effects from drug prevention education and depended primarily on their own experience or that of friends for knowledge in this area. In contrast, ABS students endorsed a variety of positive personal outcomes from prevention education and were much more likely to have learned about drugs from parents, school programs and television. HRU students emphasized hedonistic reasons for using drugs, while ABS and CON students endorsed peer pressure and personal problems as reasons. Especially important conceptually was the strong tendency on the part of ABS students to endorse an internalized or intrinsic reason for not using alcohol or other drugs.

HRU students almost invariably scored higher on measures of school dropout potential. They reported lower grades, little or no sense of engagement in the school, and a history of behavioral problems in school or community. They were more likely to be living with a single parent or in some other atypical family situation. The prediction that their natural family would be dysfunctional was strongly supported by the high rate with which HRU students rejected the idea of living with both parents. HRU students were also much more likely to have thought about dropping out of school to get a job (premature assumption of adult role) and to have friends who had already dropped out.

5. Predicting High Risk Status from Information Other than Substance Use

The findings presented up to now make it clear that high risk users differ from students in the other two groups on virtually all of the attitudes, experiences, and behaviors assessed in the survey. The goal in this section is to identify those specific items of information which discriminate between HRU and other students most effectively, but which at the same time do not ask respondents to reveal whether or not they drink or use drugs themselves.

Procedure

To accomplish this, the first half-samples were used to select items which discriminated best between HRU and the other two groups at both grades 9 and 11. Presumably, HRU students would score higher than the other two groups on a scale resulting from the combined items. The resulting scale and associated cut-off points were then applied to the second 9th and 11th grade half-samples to see how many HRU would be correctly identified.

Criteria for Item Selection

Cross-tabulations were run for each survey item other than those that asked about the student's own substance use. The cross-tabulations were broken down by (a) group (HRU, CON ABS) and (b) grade level. Each table listed, for a given item, the percent selecting each response (rows) for each of the three groups (columns) at each grade level. This display format made it easy to identify items on which the percentage of HRU students selecting one or more responses differed significantly from the other two groups. (Chi squares were computed for categorical data tables and F tests, followed by Newman-Keuls tests comparing the three groups, for numeric data).

Since the three groups were significantly different on nearly all of the items, a decision rule was needed to select the most promising items. Two rules were generated. By way of illustration, Table 18 gives the cross tabulations for the question on how often students were aware that other students in the classroom were "high" on alcohol or drugs (five choice scale from "never" to "every day" with a sixth "don't know" option). The percentages in the table are the sums of the responses "about once a week" (4) and "every day" (5).

Table 18

Percentage Giving (4) or (5) Response to Question 51
(Other Student "High" in Class) for Grades 9 and 11

	HRU	CON	ABS
Grade 9	42.9	20.3	9.3
Grade 11	53.6	22.0	13.0

It is readily apparent that HRU students at both grade levels were more often aware that another student was "high" in class (the overall F for the full table was significant as was the Newman-Keuls test for differences between HRU vs. the other two groups). Whether HRU students were more sensitive to the signs, had more accurate information about who was using, or were merely engaging in self-justification cannot be determined from these data. From a practical standpoint, it does not matter. The question clearly discriminates between the groups.

Since HRU and ABS groups were almost invariably at opposite poles, the real concern (beyond the minimal criterion of statistical significance) is whether or not the difference between HRU and CON percentages are substantial at both grade levels. The magnitude of the difference, independent of overall endorsement rate, is reflected in the ratio between the percentage giving the keyed responses for HRU vs. CON. In Table 18 these ratios are 2.11 for grade 9 and 2.44 for grade 11. In other words, an HRU student at either grade level was more than twice as likely to respond by checking alternatives (4) or (5) than was a CON student. The first rule established for selecting questions was that the HRU/CON ratio equal 2.0 or greater.

Examination of the cross-tabulation tables on the initial half-samples suggested another selection criterion. Occasionally one of the HRU/CON ratios might be quite high, yet very few students in any group actually endorse a given response or set of responses. As a second guideline, we decided that 20% or more of the HRU group should have given the keyed response or responses in order for the item to be included, regardless of the HRU/CON ratio. (This rule was relaxed only in the case of an item on number of times the student had been on probation. Probation was reported infrequently, but is obviously of special significance in the context of this research).

The items selected by the above procedure are provided in the appendix along with keyed responses, HRU/CON ratios, and percent of HRU students endorsing at each grade level. A total of 16 items and one summary score were selected by the procedure just described.

Scoring

The scoring procedure was simply to add one point to the High Risk Score each time a student gave one of the keyed responses. However, there was one exception to this rule. The four items on peer attitudes about other students who got drunk or "high" frequently were combined to provide a subscore. Higher values on this subscore were keyed for the *High Risk User Scale*, as will be explained in the next section.

Total scores on the scale were calculated for each respondent in the first half-sample. The resulting score distributions were examined to establish possible cut off points. Finally, the latter were compared by applying them to students in the second, or cross-validation, half-samples. The latter comparisons provided an independent test of the accuracy of the scale and the cut-off points.

Some Observations about Content

Several interesting observations may be made about the content of the items selected for the scale. Specifically, students are more likely to be high risk users to the extent that they (1) know more adults who use marijuana, cocaine or pills (to get "high"), (2) have close friends who regularly drink or use to the point of "getting loaded," (3) consider regular marijuana use to be less harmful than other students do, (4) rate their parents as less strongly against marijuana use (by the student), (5) learned about drugs from their own experience, (6) deny that they were in any way influenced by drug and alcohol prevention education in the school, (7) are more frequently aware of other students being "high" in the classroom, (8) have engaged in acting-out behavior in school, including cutting classes, getting into trouble in general, unexcused absences and suspension or expulsion, (9) have been arrested or placed on probation and (10) thought seriously about dropping out of school and have friends who have already done so.

The characteristics listed fall into two major groupings. Characteristics (1) - (7) cited above incorporate factors that are both conceptually and empirically *related to adolescent substance use*. For HRU students there is a much greater likelihood of contact with adults who model substance use. The same kinds of influence can be expected from close friends of HRU students. Parents are perceived by HRU students as less strongly opposed to marijuana use by their children than are parents of CON and ABS students. HRU students are quite resistant to drug prevention messages and generally depend on their own experience in this area rather than on information received from others. They are more likely to be aware of drug use by other students than are students in the other two groups. HRU students also view regular marijuana use as less harmful than do other students.

The second group, or characteristics (8) - (10), were included in the survey as predictors of school dropout. All involve *non-conforming, rebellious or delinquent behavior* in school or community. It may be argued that this type of information is sensitive and likely to be concealed

by students when not collected under conditions of anonymity. However, such information is generally present in school or other public records. Other than convenience, there is no reason to have to depend on students for it. Moreover, it is apparent that schools have always had access to much of the information needed to identify students who are at high risk of being substance abusers.

Establishing Cut-Off Points for Identifying High Risk Users

Scores were calculated on the *High Risk User Scale* for respondents in the first two half samples. The total possible score on the scale is 20 points. At both grade levels the distributions were strongly skewed in a positive direction, with 75% of 9th and 60% of 11th grade students scoring 3 or less. It was apparent that useful cut-off points for both grade levels would fall in the range of 4 to 6 points irrespective of grade level.

Still using the first half-samples, percentages of students in each group falling at or above scores of 4, 5 and 6 were determined for HRU, CON and ABS groups at both grade levels. It was readily apparent that this score range did indeed encompass the potentially useful cut-off points.

In order to cross-validate, the same set of cut-offs were calculated for the second-half samples. These results are shown in Table 19. Only the results for the second, or cross-validation, samples are shown in the table. However, there were no systematic differences between the first and second samples in percentages of each of the three groups falling at or beyond the cut-off points.

Table 19

Percentages of HRU, CON and ABS Groups Falling Beyond Three Cut-Off Points for Grades 9 and 11

	Score	HRU	CON	ABS
Grade 9	4+	78.7	23.4	7.7
	5+	70.9	15.9	4.1
	6+	60.3	10.6	2.7
Grade 11	4+	82.5	27.5	12.1
	5+	74.4	18.7	6.5
	6+	67.2	13.0	4.5

The percentages of HRU, compared to CON and ABS students, identified in Table 19 are substantial. However, the CON group is considerably larger than the HRU group, especially for grade 9 (see Table 2). This means that the actual "hit/miss" ratio of HRU to other is less satisfactory than the above percentages appear to indicate. For example, the cut-off score of 4+ at grade 11 identified a total of 508 students, of whom 289 or 56% were HRU. Another 221 students, virtually all of whom were in the CON group, were thus incorrectly identified.

In deciding which cut-off score to use in a given situation, costs associated with mistakenly identifying CON and ABS students would have to be taken into account. As long as a planned intervention is in no way disadvantageous to the students served (surely an essential condition from an ethical perspective), factors such as how expensive a program is, possible controversy associated with its use and other negative side-effects would be considered in deciding which cut-off score to apply. An inexpensive program without negative fall-out could afford to identify relatively large numbers of students in the CON group in order to maximize the number of HRU

students served. A more expensive program, or one that might be more controversial, would require a higher cut-off score. At the same time, most CON students drink and substantial numbers use marijuana, and some undoubtedly are close to high risk status.

Given the above consideration, the percentage of students selected who are HRU needs to be combined with the information in Table 19. For clarity, Table 20 provides for each cut-off score both the percentage of HRU students scoring above the cut (taken from Table 19) plus the percentage of the total thus identified who actually are HRU.

It is evident in Table 20 that the scale is somewhat more accurate for grade 11 than for grade 9. For example, a cut-off of 5+ for grade 9 identifies 7 out of 10 students in the HRU group, but, of the total group selected, only a little over half (53%) are actually HRU. In contrast, a cut-off of 6+ at grade 11 also identifies nearly 7 out of 10 HRU students, but these students constitute 70% of the total number of students identified. The hit/miss ratio, in other words, is consistently better for the 11th grade.

Table 20

Percentage of HRU Students Identified (% Hits) and Percentage of Total Identified (% Total) Who Are HRU for Grades 9 and 11

	Score	% Hits	% Total
Grade 9	4+	79	45
	5+	71	53
	6+	60	59
Grade 11	4+	82	56
	5+	74	64
	6+	67	70

A Note of Caution

While it is true that the questions in the *High Risk User Scale* do not assess alcohol or other drug use directly, this is not the same as saying that their content is neutral or necessarily opaque to the thoughtful or suspicious respondent. For example, if one were to ask a group of high school students to predict how heavy drug users might respond to each of the questions, they would probably do a reasonably good job on most. One would expect that HRU students might have close friends who use drugs heavily, would be resistant to prevention education, and so on. Likewise, one would anticipate that HRUs might have been in trouble in school and community, or at least have engaged in behaviors that could lead to trouble.

On the other hand, the advantage of the scale is that it does not require students to give information that is incriminating. There would be no reason to dissimulate under conditions in which students are convinced that they would not be disadvantaged by answering honestly. The scale also highlights information that may be available in school or other records and that on a less formal level, e.g., recommendation by teacher or counselor who knows the student, could be used to assign students to prevention and intervention programs. The signs are there if parents and teachers know what to look for. Familiarity with questions on the scale should lead to greater sensitivity to relevant information.

6. Overlap Between HRU and Dropout Risk

This research has demonstrated convincingly that questions included in the survey as predictors of dropout risk also were consistent predictors of HRU status. But how much overlap between the two groups is there? That is, how many HRU students could also be classified as high dropout risk?

There were 12 dropout risk items (described earlier in the report) on the survey. While a total score of 12 was thus within the realm of possibility, the great majority of students clustered at the low range (about 50% of 9th graders scored "0" or "1" and 60% of 11th graders scored "2" or less). A cut-off point for dropout risk status was established arbitrarily at the score interval which came closest to identifying the top 30% of students. The reasoning behind this decision was the fact that about 35% of California students drop out of secondary school (Rumberger, 1987).

Table 21 reveals that a dropout risk score of 3 or greater identified 32.3% of 9th grade students. A score of 4 or greater identified 28.3% of 11th grade students. These cut-off scores were used to generate the rest of the information in Table 21.

Despite the admittedly arbitrary nature of the cut-off scores, there was substantial overlap between the HRU and dropout risk groups, especially at grade 9. Two thirds of the HRU students were identified as high dropout risk compared to one third of CON and 15% of ABS students. Among 11th graders, 6 in 10 HRU, 2 in 10 CON and 1 in 10 ABS were so identified. (Chi square statistics for the full tables from which the above percentages were taken were significant at $p < .0001$). At both grade levels it is clear that most high risk drug users are also dropout risks. Among students still enrolled in school, there thus is a substantial degree of overlap among these two groups.

Table 21

Percentage Overlap Between Population of Potential Dropouts and HRU, CON and ABS Groups for Grades 9 and 11

	Score	% Grade	HRU	CON	ABS
Grade 9	3+	32.3	65.5	32.5	14.9
Grade 11	4+	28.3	56.7	20.2	11.9

This finding is important because it supports the proposition that a larger, more inclusive conception of high risk status is justified. This research assessed substance use and related attitudes and experiences, rebellious and delinquent behavior, level of engagement in the school, family situation, as well as other factors pertinent to two of our societies' most serious youth problems--substance use and dropping out of school. When the lens focuses on students who appear to be at risk for either, the overlap between these two groups is clearly extensive.

It is encouraging that a group of students who are likely to be both dropout risks and high risk drug users is so very easy to identify. This is a subpopulation in deep trouble. For most of its members, the problem is not substance abuse *or* delinquency *or* lack of engagement in school *or* dysfunctional family life, but potentially *all* of the above. The issue is whether or not our society is willing to make a commitment to identify this subpopulation as early as possible and to intervene with approaches that address the multiple needs of its members.

APPENDIX

Selecting Items for the *High Risk User Scale*

Descriptive information on the items selected for the *High Risk User Scale* under the ground rules described in the text is provided in this Appendix. Each of the items selected is given along with the responses keyed for HRU status. In addition, the ratios of proportions of HRU vs. CON who selected the keyed response or responses is given by grade level. Finally, the percentage of HRU students in the first half-sample who gave the keyed response or responses is also provided, again by grade level.

27. *How many adults do you know who use: marijuana or hashish (within the past year)?*

Keyed responses: "many" (3) through "all" (5)
HRU/CON ratios: 2.86 (9th) and 3.36 (11th)
Percent HRU endorsing: 36% (9th) and 43% (11th)

28. *How many adults do you know who use: cocaine (within the past year)?*

Keyed responses: "some " (2) through "all" (5)
HRU/CON ratios: 2.19 (9th) and 2.22 (11th)
Percent HRU endorsing: 55% (9th) and 71% (11th)

29. *How many adults do you know who use: pills (diet pills, sleeping pills, tranquilizers) (at least once a week)?*

Keyed responses: "many" (3) through "all" (5)
HRU/CON ratios: 2.56 (9th) and 2.57 (11th)
Percent HRU endorsing: 24% (9th) and 22% (11th)

30-33. *What would your 4 or 5 best friends think about another student who usually gets: loaded on drugs at parties* (30); *drunk at parties* (31);*uses drugs at parties or with friends on a regular basis, but rarely gets obviously loaded or causes any problems* (32); *drinks a lot at parties or with friends on a regular basis, but rarely gets drunk or causes any problems* (33).

Keyed responses: Sum of responses "would avoid, see as unhealthy or unfortunate" (1) to "my friends are pretty much like that student as far as drug and alcohol use is concerned" (4). Total score for items coded 11=1, 12=2, 13=4, 14=5, 15=6, 16=7.
HRU/CON ratios: 3.36 (9th) and 3.45 (11th)
Percent HRU endorsing: 53% (9th) and 70% (11th)

34. *I think frequent (daily or almost daily) use of marijuana is.. . . .*

Keyed responses: "somewhat harmful" (3) through "harmless" (5)
HRU/CON ratio: 3.22 (9th) and 5.32 (11th)
Percent HRU endorsing: 42% (9th) and 46% (11th)

36. *My parents are _____ my using marijuana.*

Keyed responses: "moderately against" (2) through "strongly in favour" (5)
HRU/CON ratio: 2.72 (9th) and 2.96 (11th)
Percent HRU endorsing: 25% (9th) and 34% (11th)

41. *A lot of what I know about drugs I learn from _____.*

Keyed responses: "own experience" (4)
HRU/CON ratio: 3.16 (9th) and 2.39 (11th)
Percent HRU endorsing: 49% (9th) and 63% (11th)

48. *How has what you learned in school about alcohol or drugs affected you?*

Keyed responses: "has not affected me. I have not learned anything" (a)
HRU/CON ratio: 3.37 (9th) and 2.57 (11th)
Percent HRU endorsing: 26% (9th) and 17% (11th)

51. *In the last year or so, how often have you noticed that another student came to class high from drugs or alcohol?*

Keyed responses: "once a week" (4) and "every day" (5)
HRU/CON ratio: 2.11 (9th) and 2.44 (11th)
Percent HRU endorsing: 43% (9th) and 54% (11th)

52. *In the last year have you cut (not attended) a school class?*

Keyed responses: "more than 6 times" (4)
HRU/CON ratio: 3.41 (9th) and 2.7 (11th)
Percent HRU endorsing: 30% (9th) and 47% (11th)

53. *In the last year have you: been suspended or expelled from school?*

Keyed responses: "once/twice" (2) through "more than 6 times" (4)
HRU/CON ratio: 2.38 (9th) and 3.08 (11th)
Percent HRU endorsing: 27% (9th) and 30% (11th)

54. *In the last year have you: been arrested by police?*

Keyed responses: "once/twice: (2) through "more than 6 times" (4)
HRU/CON ratio: 4.46 (9th) and 3.79 (11th)
Percent HRU endorsing: 27% (9th) and 22% (11th)

55. *In the last year have you: been placed on probation by a judge?*

Keyed responses: "once/twice" (2) through "more than 6 times" (4)
HRU/CON ratio: 4.61 (9th) and 3.39 (11th)
Percent HRU endorsing: 14% (9th) and 12% (11th)

56. *In the last year have you: been in trouble at school (sent out of class to principal, assistant principle, counselor)?*

Keyed responses: "3 to 6 times" (3) and "more than 6 times" (4)
HRU/CON ratio: 2.84 (9th) and 3.29 (11th)
Percent HRU endorsing: 27% (9th) and 19% (11th)

58. *In the last year have you: been absent from school all day without having an excuse such as being sick or having a doctor's appointment?*

Keyed responses: "3 to 6 times" (3) and "more than 6 times" (4)
HRU/CON ratio: 2.81 (9th) and 2.87 (11th)
Percent HRU endorsing: 27% (9th) and 40% (11th)

63. *Do you ever think about quitting school so that you can get a full time job?*

Keyed responses: "fairly often" (3) through "definitely intend to quit school and get a job" (5)
HRU/CON ratio: 3.22 (9th) and 2.61 (11th)
Percent HRU endorsing: 19% (9th) and 22% (11th)

72. *Have any of your best friends or students you talk to the most dropped out of school?*

Keyed responses: "two have dropped out " (3) and "three or more have dropped out" (4)
HRU/CON ratio: 2.92 (9th) and 2.16 (11th)
Percent HRU endorsing: 39% (9th) and 43% (11th)

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